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JC Patents			KERNs, KEVIN P	
4 Venture Suite 250			ART UNIT	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/561,663	<b>Applicant(s)</b> SUN, JINGEN	
	<b>Examiner</b> Kevin P. Kerns	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 17 October 2008.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-14 and 16-22 is/are pending in the application.
- 4a) Of the above claim(s) 18-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-14,16 and 17 is/are rejected.
- 7) ☒ Claim(s) 1,4,5,7,8,12 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group I (claims 1-5, 7-14, 16, and 17) in the reply filed on October 17, 2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Drawings***

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "position-limiting parts (16) arranged on the inner side..." (of claims 1 and 3) and "a plurality of position-limiting parts (16) are fixed on the inner side of the mould seats" (of claim 2) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

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of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. Figure 25 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "15" (Figures 1 and 2); "41" (Figures 10 and 11); and "18" (Figure 15). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures

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appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Specification***

5. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

In this instance, the abstract recites the legal term "comprises" (in the 2<sup>nd</sup> line), and also recites the phrases "The present invention relates to" and "according to the present invention", which are phrases that can be implied.

6. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the limitation "arranged on the inner side..." (of claims 1 and 3) is absent from the originally filed specification, as Figures 2-4, 13, and 15 show that

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the "position-limiting parts (16)" are arranged in (or within) the inner side of the mould seats. In a similar context, the claim 2 limitation "a plurality of position-limiting parts (16) are fixed on the inner side of the mould seats" is absent from the originally filed specification, as these "position-limiting parts (16)" are only formed on the inner side of the mould seats (6,7) as an integrated body", as set forth in the end of claim 2 (also see Figures 2-4, 13, and 15, which show that structures 16 are only formed/cut, not fixed).

7. The disclosure is objected to because of the following informalities:

On page 1, 12<sup>th</sup> line, replace "piston" with "pistons".

On page 1, 21<sup>st</sup> line, replace "sough" with "sought".

On page 2, 4<sup>th</sup> and 5<sup>th</sup> lines, replace "nuzzle" with "nozzle" before "92".

On page 2, 17<sup>th</sup> line, replace "fix" with "fixing" after "way of".

On page 3, last line, replace "out" with "outer" before "periphery".

On page 7, 2<sup>nd</sup> line, replace "descents" with "descends".

On page 19, 4<sup>th</sup> line, replace "Fig. 4" with "Fig. 24".

On page 19, 17<sup>th</sup> line, replace "92" with "9-2".

On page 2 of the preliminary amendment to the specification dated March 20, 2007, the 4<sup>th</sup> line of the last full paragraph includes the term "triangle" that should be changed to "triangular".

On page 5 of the preliminary amendment (in the paragraph beginning with "The present invention provides s..."), the letter "s" should be changed to "a" after "provides".

Due to numerous errors, however, the originally filed specification and preliminary amendment of the specification (on pages 2-11) dated March 20, 2007 have not been checked to the extent necessary to determine the presence of all possible minor errors (grammatical, typographical, and idiomatic). Cooperation of the applicants is requested in correcting any errors of which the applicants may become aware of in the specification, in the claims, and in any future amendment(s) that the applicants may file. Corrections and/or clarifications are required for these and other errors that occur throughout the specification.

### ***Claim Objections***

8. Claims 1, 4, 5, 7, 8, 12, and 14 are objected to because of the following informalities:

In claim 1, 1<sup>st</sup> line, replace “alloy” with “alloys”.

In claim 1, 2<sup>nd</sup> line, replace “seat” with “seats” after “mould”.

In claim 1, 2<sup>nd</sup> line, insert “and” before “film”, and replace “mould” with “moulds” after “film”.

In claim 1, 9<sup>th</sup> line, it is believed that the term “i.e.” should be replaced with “through a” for clarity.

In claim 4, 2<sup>nd</sup> line, replace “an” with “a” before “cutter”.

In claim 4, 3<sup>rd</sup> line, it is believed that “the cutter” should be replaced with “the fringe 21” to be in agreement with the “fringe” structure contacting the mould wall.

In claim 5, 2<sup>nd</sup> line, insert “a” before “triangle”.

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In claim 5, 3<sup>rd</sup> line, insert "a" before "truncate arc".

In claim 5, 4<sup>th</sup> line, insert either "a" or "the" before "cutter".

In claim 7, 2<sup>nd</sup> line, insert "a" before "cylinder".

In claim 8, 2<sup>nd</sup> and last lines, replace "seat (6,7) has" with "seats (6,7) have".

In claim 12, 4<sup>th</sup> line, replace "slides" with "slide".

In claim 12, last two lines, replace "inner bottom of the mould seat (25)" with "inner bottom (25) of mould seats (6,7)".

In claim 14, 2<sup>nd</sup> line, replace "are" with "is" after "crystallizer".

Corrections and/or clarifications are required for these and other errors that occur throughout the claims.

### ***Claim Rejections - 35 USC § 112***

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-5, 7-14, 16, and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the radiation shape" in the 4<sup>th</sup> line. There is insufficient antecedent basis for this limitation in the claim. In addition, this limitation is unclear but is believed to correspond to the fins/slots in the relationship between "position-limiting parts 16" and "medium channel 17" (of Figures 2-4, 13, and 15).



Claim 1 recites the limitation "the mould walls" in the 5<sup>th</sup> line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to delete "the" to obtain proper antecedent basis.

Claim 1 recites the limitations "the casting" and "the adjacent position-limiting parts" in the 7<sup>th</sup> line. There is insufficient antecedent basis for these limitations in the claim. It is suggested to replace "the" with "a" before "casting", and to delete "the" before "adjacent" to obtain proper antecedent basis.

Claim 1 recites the limitation "the locating part" in the 8<sup>th</sup> line. There is insufficient antecedent basis for this limitation in the claim. In addition, this limitation is unclear since it cannot be determined what structure(s) the "locating part" corresponds to, and it is suggested to provide distinctly identified structure(s).

Claim 1 recites the limitations "the cycle passage" and "the cooling medium" in the 9<sup>th</sup> line. There is insufficient antecedent basis for these limitations in the claim. It is suggested to replace "the" with "a" before "cycle", and to delete "the" before "cooling" to obtain proper antecedent basis.

Claim 1 recites the limitation "the drain pipe (12)" in the last line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace "the" with "a" to obtain proper antecedent basis.

With regard to claims 1-3, the limitations "arranged on the inner side..." (of claims 1 and 3) and "a plurality of position-limiting parts (16) are fixed on the inner side of the mould seats" (of claim 2) are not only absent from the drawings (see above section 2) and the originally filed specification (see above section 6), but it is also believed that the

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applicant intended for the embodiments of Figures 2-4, 13, and 15 to be claimed. In this instance, it is suggested that the applicant amend these claims (e.g. to change “on” to either “in” or “within” in claims 1 and 3, and to change “fixed on” to “cut into” in claim 2) to reflect that the plurality of “position-limiting parts (16)” are an integral part of the mould seats (6,7) to form medium channels 17 therebetween. In other words, Figures 2-4, 13, and 15 show that structures (16,17) are a portion of the mould seats (6,7), and not formed by any “external” structure(s). Corrections and/or clarifications are required.

Claim 5 recites the limitations “the fringe”, “the cutter”, and “the two adjacent fringes” in the 2<sup>nd</sup>, 3<sup>rd</sup>, and 4<sup>th</sup> lines, respectively. There is insufficient antecedent basis for these limitations in the claim. It is suggested to replace “the” with “a” in all three instances to obtain proper antecedent basis.

Claim 8 recites the limitation “the mould joint” in the 2<sup>nd</sup> and 4<sup>th</sup> lines. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace “the” with “a” to obtain proper antecedent basis.

Claim 8 recites the limitation “the mould closing fits” in the last line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to delete “the” to obtain proper antecedent basis.

Claim 9 recites the limitation “the mould ear” in the last line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to delete “the” and replace “ear” with “ears” to obtain proper antecedent basis.

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Claim 10 recites the limitation "the cylindrical casting" in the 2<sup>nd</sup> line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace "the" with "a" to obtain proper antecedent basis.

Claim 11 recites the limitation "the martensite heat resistant steel" in the last line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to delete "the" to obtain proper antecedent basis.

Claim 12 recites the limitation "the cylinder (22)" in the 4<sup>th</sup> line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace "the" with "a" to obtain proper antecedent basis.

Claim 13 recites the limitation "the determined speed" in the last two lines. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace "the" with "a" to obtain proper antecedent basis.

Claim 17 recites the limitation "the mould joint" in the 3<sup>rd</sup> and 4<sup>th</sup> lines. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace "the" with "a" to obtain proper antecedent basis.

Claim 17 recites the limitation "the tubular casting" in the last line. There is insufficient antecedent basis for this limitation in the claim. It is suggested to replace "the" with "a" to obtain proper antecedent basis.

Corrections and/or clarifications are required.

***Allowable Subject Matter***

11. Claims 1-5, 7-14, 16, and 17 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. [NOTE: In addition, corrections to the above objections to the drawings, abstract, specification, and claims are also required.].

12. The following is a statement of reasons for the indication of allowable subject matter: the prior art fails to teach or suggest a crystallizer mold assembly (as best illustrated in Figures 2-4, 13, and 15 of the application) that includes the combination of mould seats arranged on an end mould, film moulds fixed on the mould seats and having their outer periphery arranged adjacent the inner periphery of the mould seats, and a plurality of position-limiting parts (fin-shaped structures) arranged in/within the inner side of the mould seats to form a plurality of respective closed slots therebetween for cooling medium flow (independent claim 1).

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. US 3,887,157 is cited in PTO-892 as the closest related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin P. Kerns whose telephone number is (571)272-1178. The examiner can normally be reached on Monday-Friday from 8:00am-5:00pm.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jessica Ward can be reached on (571) 272-1223. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kevin P. Kerns  
Primary Examiner  
Art Unit 1793

/Kevin P. Kerns/  
Primary Examiner, Art Unit 1793  
December 19, 2008